

WHAT IS CLAIMED IS:

[C001] 1. A component comprising:
a wall having a cold surface and a hot surface;

at least one film-cooling hole extending through said wall for flowing a coolant from the cold surface to the hot surface, said film-cooling hole defining an exit site in the hot surface of said wall; and

at least one flow modifier formed on the hot surface of said wall and adapted to direct the coolant flowing from said film-cooling hole and out of the exit site toward the hot surface of said wall, wherein said flow modifier extends outwards from the hot surface of said wall and conforms to the hot surface of said wall.

[C002] 2. The component of Claim 1, wherein said at least one flow modifier is situated on the hot surface of said wall and does not extend over the exit site.

[C003] 3. The component of Claim 2, wherein said at least one flow modifier is rounded.

[C004] 4. The component of Claim 2, wherein said at least one flow modifier is polygonal.

[C005] 5. The component of Claim 2, comprising a plurality of flow modifiers for each of the at least one exit sites.

[C006] 6. The component of Claim 5, wherein said flow modifiers are positioned on a downstream side of the exit site.

[C007] 7. The component of Claim 5, wherein said flow modifiers are positioned on at least one of a lateral side of the exit site.

[C008] 8. The component of Claim 5, wherein at least one of said flow modifiers is positioned on a downstream side of the exit site, and wherein at least one of said flow modifiers is positioned on a lateral side of the exit site.

[C009] 9. The component of Claim 2, wherein said at least one flow modifier extends less than about 0.76 mm from the hot surface of said wall.

[C010] 10. The component of Claim 2, wherein said at least one flow modifier extends a distance in a range of about 0.13 mm to about 0.25 mm, from the hot surface of said wall.

[C011] 11. The component of Claim 1, wherein said at least one flow modifier is positioned on a downstream side of the exit site.

[C012] 12. The component of Claim 1, wherein said at least one flow modifier is positioned on a lateral side of the exit site.

[C013] 13. The component of Claim 1, wherein said at least one film-cooling hole comprises a round hole.

[C014] 14. The component of Claim 1, wherein said at least one film-cooling hole comprises a shaped hole.

[C015] 15. The component of Claim 1, comprising:

a plurality of film-cooling holes extending through said wall for flowing a coolant from the cold surface to the hot surface, each of said film-cooling holes defining a respective exit site in the hot surface of said wall, wherein said film-cooling holes are arranged in at least one row; and

a plurality of flow modifiers formed on the hot surface of said wall, wherein at least one of said flow modifiers is associated with each of said film-cooling holes and adapted to direct the coolant flowing from the respective film-cooling hole and out of the respective exit site toward the hot surface of said wall.

[C016] 16. The component of Claim 15, further comprising a plurality of connectors formed on the hot surface of said wall, each of said connectors extending outwards from the hot surface of said wall and conforming to the hot surface of said

wall, wherein said connectors are adapted to enhance interaction between each of a plurality of coolant flow streams associated with the respective film-cooling holes.

[C017] 17. The component of Claim 15, wherein said film-cooling holes are arranged in a plurality of rows, and wherein at least a subset of said flow modifiers are situated between the rows of film-cooling holes, and wherein said flow modifier situated between the rows are adapted to enhance the flow of coolant along the hot surface between the rows.

[C018] 18. The component of Claim 1, further comprising at least one ridge formed on the hot surface of said wall, wherein said at least one ridge extends along at least a portion of the exit site and further extends to a position downstream of the exit site.

[C019] 19. The component of Claim 1, wherein said component comprises a hot gas path component.

[C020] 20. A component comprising:

a wall having a cold surface and a hot surface;

at least one film-cooling hole extending through said wall for flowing a coolant from the cold surface to the hot surface, said film-cooling hole defining an exit site in the hot surface of said wall; and

at least one ridge formed on the hot surface of said wall, wherein said at least one ridge extends along at least a portion of the exit site and further extends to a position downstream of the exit site.

[C021] 21. The component of Claim 20, wherein said at least one ridge extends outwards from the hot surface of said wall and conforms to the hot surface of said wall.

[C022] 22. The component of Claim 21, comprising a plurality of ridges, wherein at least two ridges extend along at least a portion of the exit site and further extend downstream of the exit site.

[C023] 23. The component of Claim 21, comprising a plurality of film-cooling holes extending through said wall for flowing a coolant from the cold surface to the hot surface, each of said film-cooling holes defining a respective exit site in the hot surface of said wall, wherein said film-cooling holes are arranged in at least a first and a second row; and

a plurality of ridges formed on the hot surface of said wall, wherein at least a subset of said ridges extend along at least a portion of the exit sites in the first row and further extend downstream of the exit sites in the second row.

[C024] 24. The component of Claim 20, wherein said component comprises a hot gas path component.

[C025] 25. A component comprising:

a wall having a cold surface and a hot surface;

at least one film-cooling hole extending through said wall for flowing a coolant from the cold surface to the hot surface, said film-cooling hole defining an exit site in the hot surface of said wall and having a passage wall; and

at least one flow modifier formed on the passage wall and adapted to spread the coolant flowing from said film-cooling hole and out of the exit site laterally.

[C026] 26. The component of Claim 25, wherein said at least one flow modifier is coextensive with the hot surface of said wall.

[C027] 27. The component of Claim 25, wherein said at least one flow modifier extends out of the exit site and beyond the hot surface of said wall.

[C028] 28. The component of Claim 25, wherein said at least one flow modifier is contained within said film-cooling hole and does not reach the hot surface of said wall.

[C029] 29. The component of Claim 25, wherein said at least one flow modifier is rounded.

[C030] 30. The component of Claim 25, wherein said at least one flow modifier is polygonal.

[C031] 31. The component of Claim 25, comprising a plurality of flow modifiers for each of the at least one exit sites.

[C032] 32. The component of Claim 31, wherein said flow modifiers are positioned on a downstream side of the exit site.

[C033] 33. The component of Claim 25, wherein said at least one flow modifier is positioned on a downstream side of the exit site.

[C034] 34. The component of Claim 25, wherein said at least one film-cooling hole comprises a round hole.

[C035] 35. The component of Claim 25, wherein said at least one film-cooling hole comprises a shaped hole.

[C036] 36. The component of Claim 25, wherein said component comprises a hot gas path component.

[C037] 37. A turbine assembly comprising:

a first component;

a second component, said first and second components defining a secondary cooling slot, wherein said secondary cooling slot receives and guides a secondary coolant flow; and

at least one flow modifier formed on a surface of one of said first and second components, wherein said at least one flow modifier is adapted to enhance the secondary coolant flow along at least one of said first and second components within said secondary coolant slot.

[C038] 38. The turbine assembly of Claim 37, wherein said at least one flow modifier extends into said secondary cooling slot.

[C039] 39. The turbine assembly of Claim 37, wherein said at least one flow modifier is rounded.

[C040] 40. The turbine assembly of Claim 37, wherein said at least one flow modifier is polygonal.

[C041] 41. The turbine assembly of Claim 37, wherein said at least one flow modifier forms a ridge extending along the respective one of said first and second components.

[C042] 42. The turbine assembly of Claim 41, wherein the ridge extends onto a hot gas path surface of the respective one of said first and second components.

[C043] 43. The turbine assembly of Claim 37, comprising a plurality of flow modifiers formed on a surface of one of said first and second components, wherein said flow modifiers are linear.

[C044] 44. The turbine assembly of Claim 37, comprising a plurality of flow modifiers formed on a surface of one of said first and second components, wherein said flow modifiers are curved.